User Manual

Encoder transmitter

PM-EN12

Version: 1.1   Release date: 28/01/2023

Contents

Introduction

1.1 The purpose of the manual

This manual contains all the information needed to set up, install, wire and communicate with the PM-EN12 module .

1.2 Technical knowledge required

In order to understand this booklet, basic familiarity with electrical topics is required.

1.3 Manual validation

This manual is valid for this specification.

MODEL	Hardware	Software
PM-EN12	V1.2	V1.5

1.4 technical support

To get technical support, contact us in the following ways :

❖ Email: **info@parsmega.com**

❖ Phone: **+98 21 91009955**

❖ WhatsApp: **+98 9981122566**

2   safety tips

Starting the module by non-experts and ignoring the commands may cause serious damage to the module.

This module does not directly pose a risk to human life.

The use of this module is not approved for use in life-threatening devices.

3   Description

3.1   Basic description

PM-EN12 is a multi-purpose and flexible two-channel encoder transmitter that can read two incremental encoders simultaneously.

This module has the ability to connect to a computer and control equipment such as (HMI , PLC)

3.2   Module Uses

This encoder reading module is a very suitable option for projects that require displacement measurements. Such as:

- Measuring devices
- Pipe production machines
- Transit weighing
- Tensile and compression testing machines

3.3   Technical Specifications

- Ability to connect 2 encoders simultaneously
- 6 digital outputs (3 outputs for each channel)
- Isolated RS485 serial communication with MODBUS-RTU protocol support
- Wide range of port 485 baud rate (from 2400 to 230400)
- Encoder voltage isolation (15Kv)
- Ability to read encoder pulses up to 1.5 Mhz
- Working temperature range -30 ~ +50 degrees Celsius

4   Installation

Observe EMC items

This product is designed and built to work in industrial environments, however, for proper performance, you must check and fix the issues that cause disruption to the module's work before installation.

4.1   Things that cause system disruption

- Electromagnetic field
- Telecommunication cables
- Power circuit cables

4.2   Thing to consider

Convenient ground connection

• When installing the module on the panel body, make sure that the panel body is connected to the ground.
• All ineffective metal parts are (firmly) grounded.
• When connecting varnished wires to ground connection, remove the varnish from that part.

Appropriate wiring method
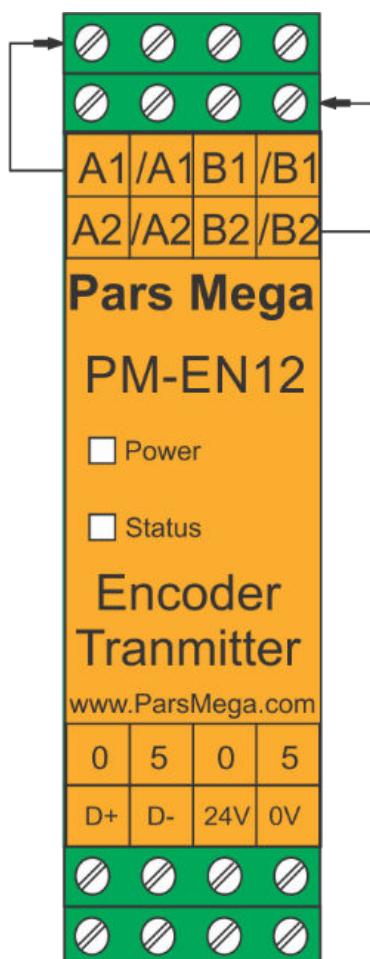
- Divide your system cables into different groups (high voltage, power supply, and signal, analog).
- Always transfer the power cable from another duct.
- Always place your analog cables close to the body of the panel and rails (which are grounded).

Cable shield Connecting

- Make sure the shields are properly grounded.
- Try to keep a smart part of the cable without a shield.

5   connections

All connections of this module are screwed.

5.1   Connections Group

The connections of this module include 4 main groups:

• 24V module power supply

• Encoder isolation power supply 5V (output)

• Serial RS485

• Encoder inputs

5.2   Power supply connection

The proper power supply for this module is 24 v dc (reverse power supply protected).

Terminal 1 : 0v

Terminal 2 : + 24v

5.3   Encoder connection

Encoders with the following capabilities can be connected to this module:

- Differential output pulses
- Accepting 5V supply voltage

Label	Function
A1	Positive output of encoderA channel 1
/A1	output Negative encoderA channel 1
B1	Positive output of encoderB channel 1
/B1	output Negative encoderB channel 1
0V	Isolated negative connection for encoder power supply
5V	Isolated 5V connection to power the encoder

5.4   Isolated RS485 connection

This module is equipped with an RS485 serial port with the Modbus-RTU protocol implemented.

Label	Function
D+	Positive data
D-	Negative data

6   parameters

All parameters are provided at the time of purchase with default values.

For ease of work, parameters are divided into different groups.

• The length of all variables to Word

• If the parameters are not sent to the parameters, the previous values will be valid after the device is turned off.

• Some parameters need to be restarted to make changes.

• There are 3 types of address in the address section:

The first address is for software whose address format is 40001.

Such as: PLC Fatek programming environment, OPC Server.

The second address is for the programming environments where the address starts from 0 and is in the decimal type.

The third address is related to the programming environment where the address starts from 0 and is in Hex type.

6.1   communication parameter

Title	Variable type	length	address	Description	default
ID	Unsigned int	1	40001 0 d 0 h	1~247	1
Baud Rate	Unsigned int	1	40002 1 d 1 h	0~10 0=2400 1=4800 2=9600 3=14400 4=19200 5=28800 6=38400 7=57600 8=76800 9=115200 10=230400	2
parity	Unsigned int	1	40003 2 d 2 h	0=none 1=odd 2=even	2
Stop bit	Unsigned int	1	40004 3 d 3 h	0=1 1=2	0

Note: To apply the above parameters, the system must be reset once

6.2 Module information parameter

- All the following parameters are read only

Title	Variable type	length	Address	Description	Default
Firmware ver	Float	2	40007 6 d 6 h		
Hardware ver	Float	2	40009 8 d 8 d		
Model	Unsigned int	1	40011 10 d AH		600
Serial number	Unsigned long	2	40012 11 d Bh		

6.3 Counter display parameter

Title	Variable type	the length	Ability to write	Address	Description	Default
Encoder counter value 1	LONG	2	RW	40027 26 d 1A h		-
Encoder counter value 2	LONG	2	RW	40029 28 d 1C h		-

The above values show the increase or decrease of the encoder, these parameters can be set by writing to it via Modbus.

Title	Variable type	length	Ability to write	Address	Description	Default
EnableMax Min Encoder 1	Word	1	RW	40033 32 d 20 h		0
EnableMax Min Encoder 2	Word	1	RW	40034 33 d 21 h		0
Max encoder value 1	LONG	2	RW	40035 34 d 22 h		-
Max encoder value 2	LONG	2	RW	40037 36 d 24 h		-
Min value 2	LONG	2	RW	40039 38 d 26 h		-
Min value 2	LONG	2	RW	40041 40 d 28 h		-

It is possible to record max and min for each channel.

To do this, you must first set the value of the MAX and MIN channel to 1.

If 1, this amount of MAX and MIN values will be compared with the amount of counters and the highest and lowest value will be recorded.

To zero the max and min value, they can be given by 0.